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APPELLANTS' BRIEF Address to: Mail Stop Appeal Brief-Patents Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	10/817,115
	Confirmation Number	3835
	Attorney Docket No.	10040012-1
	Filing Date	April 2, 2004
	First Named Inventor	Peter G. Webb
	Examiner	Jason M. Sims
	Group Art	1631
	Title: *A Computer-Readable Medium for Decoding Non-Biological Microarray Information*	

Sir:

This Brief is filed in support of Appellants' appeal from the Examiner's Final Rejection dated August 22, 2007. No claims have been allowed and Claims 1-10 and 26-27 are pending. Claims 1-10 and 26-27 are appealed. A Notice of Appeal was filed on December 21, 2007. As such, this Appeal Brief is timely filed.

The Board of Appeals and Interferences has jurisdiction over this appeal pursuant to 35 U.S.C. §134.

The Commissioner is hereby authorized to charge deposit account number 50-1078, order no. 10040012-1 to cover the fee required under 37 C.F.R. §1.17(c) for filing Appellants' brief. In the unlikely event that the fee transmittal or other papers are separated from this document and/or other fees or relief are required, Appellants petition for such relief, including extensions of time, and authorize the Commissioner to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 which may be required by this paper, or to credit any overpayment, to deposit account number 50-1078, order no. 10040012-1.

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REAL PARTY IN INTEREST

The inventors named on this patent application assigned their entire rights to the invention to Agilent Technologies, Inc.

RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences known to Appellants, the undersigned Appellants' representative, or the assignee to whom the inventors assigned their rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal.

STATUS OF CLAIMS

The present application was filed on April 2, 2004 with claims 1-28. During the course of prosecution, claims 11-25 and 28 were withdrawn by the Examiner. Claims 1-10 and 26-27 were examined and rejected. Accordingly, Claims 1-10 and 26-27 are pending and appealed herein.

STATUS OF AMENDMENTS

No amendments to the claims were filed subsequent to issuance of the Final Rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention is drawn to compositions for encoding and decoding array information on an array.

Below is a description of each independent claim and dependent claim argued separately and where support for each can be found in the specification.

Independent claim 1 recites a computer readable medium containing information for decoding encoded array information obtained from an array containing one or more array information features (see specification on page 15, lines 5-14). The computer readable medium is selected from the group consisting of a data storage means, a memory access means, hard disk drive, an integrated circuit, a floppy disk, magnetic tape, a ROM, a CD-ROM, a hard-drive ROM, a DVD, a magneto-optical disk, a computer readable card, and a RAM (see specification on page 12, lines 14-27).

Dependent claim 3 recites the computer-readable medium of claim 1, in which the information for decoding encoded array information includes a table that contains a list of feature identifiers and a list of probe identifiers corresponding to the feature identifiers (see specification on page 32, line 33 – page 33 line 12.

Dependent claim 4 recites the computer-readable medium of claim 3, in which the table indicates that certain features of the array are array information features (see specification on page 32, lines 24-32).

Dependent claim 5 claims the computer-readable medium of claim 3, in which the table indicates which features correspond to which bit of a code (see specification on page 33 lines 13-24).

Dependent claim 7 claims the computer-readable medium of claim 1, in which the information for decoding encoded array information is a file that has a unique identifier that corresponds to a unique identifier of an array (see specification on page 14, lines 18-28)

Dependent claim 8 claims the computer-readable medium of claim 7, in which the array information features encode binary coded information; and the file contains information for decoding the binary coded information (see specification on page 14, lines 1-5, and lines 18-28 and page 23, lines 3-22).

Dependent claim 9 recites the computer-readable medium of claim 8, in which the binary coded information is encoded using a binary coded decimal (BCD) or binary ASCII code (see specification on page 14, lines 1-10).

Dependent claim 10 recites the computer-readable medium of claim 1, in which the decoded array information indicates a particular array of a multi-array substrate (see specification on page22, lines 27-29).

Independent claim 26 claims a kit for use with an array scanner, in which the kit comprises a computer-readable medium according to claim 1, and instructions for operating the scanner according to the computer-readable medium (see specification on page 35, line 32 – page 36, line 29).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 1-8 and 26-27 stand rejected under 35 U.S.C. §102 as being unpatentable over Cronin et al (US 2006/0229824).

II. Claim 9 stands rejected under 35 U.S.C. §103 as being unpatentable over Cronin et al. and Cool (US 6912469).

III. Claim 10 stands rejected under 35 U.S.C. §103 as being unpatentable over Cronin et al. and Hu et al. (US 2004/0248287)

ARGUMENT

I. Claims 1-8 and 26-27 are not unpatentable under 35 U.S.C. §102 over Cronin et al.

The Examiner has rejected claims 1-8 and 26-27 under 35 U.S.C. § 102(e) as being anticipated by Cronin et al. (US 2006/0229824). The Appellants respectfully traverse this rejection. The Appellants will argue the Claims in the following groups: Claims 1, 2, 6, 26 and 27 as a first group, Claims 3-5 as a second group, and Claims 7 and 8 as the third group.

The standard for anticipation under 35 U.S.C. § 102 is one of strict identity. An anticipation rejection requires a showing that each limitation of a claim be found in a single reference.[1]

As set forth in the arguments below, the Appellants contend that the reference cited by the Examiner fails to disclose each and every element of the claimed invention, and as such cannot anticipate it.

Group I: Claims 1-8, 26, and 27

The claimed invention is drawn to a computer-readable medium comprising information for decoding encoded array information. Array information is information about the array and **not** information about samples or targets.

1 *Atlas Powder Co. v. E.I. DuPont de Nemours & Co.*, 224 U.S.P.Q. 409, 411 (Fed. Cir. 1984); *Glaxo v. Novopharm, Ltd.* 334 U.S. P.Q.2d 1565 (Fed. Cir. 1995).

The Appellants submit that Cronin '824 does not disclose each and every element of the rejected claims. Specifically, Cronin '824 fails to provide for information for decoding encoded array information obtained from an array.

In making this rejection, the Examiner cites Claims 31-38, and 51-52 in Cronin '824 as anticipating the claimed invention. However, a detailed analysis of these claims and the specification of Cronin '824 and of its parent Cronin '830 (US2003/0165830) reveals that Cronin only discloses information about computer analysis of sample target binding. It fails to disclose "array information" as recited in Claim 1.

In attempting to establish the rejection, the Examiner points to paragraphs [0089] and [0138] in the parent Cronin '830 as supporting the claims of Cronin '824. Paragraph [0089] discloses an extra lane of probes named the wild-type probes, which exhibit complementarity to a reference sequence. It is stated that this does not present any difficulty for computer analysis of the data. Paragraph [0138] describes how the identity of the target hybridized to probes can be decoded from the hybridization pattern. These passages are related to target identification and not array information. Contrary to the assertion of the Examiner, neither of these passages provide for decoding encoded array information from the array.

In maintaining this rejection in the Advisory Action, the Examiner states that "data obtained from the array itself is reasonably interpreted as being 'array information'." The Appellants submit that this interpretation is inconsistent with current law.

The Federal Circuit's *en banc* decision in *Phillips v. AWH Corp.* 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) provides detailed guidelines on claim interpretation. According to *Phillips*, claim terms must be given a reasonable meaning that is consistent with the meaning given by one of skill in the art. Moreover, in order to interpret claims as reasonably as a person of ordinary skill in the art, one must not only read the claim term in the context of the claim but must also take into account the entire patent, including the specification, extrinsic evidence concerning relevant scientific principles, and the state of the art.

This guidance is consistent with other case law[2], which states that:

> "[The] broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999)" *Hyatt*, 211 F.3d at 1372

In light of the principle that a claim limitation must be given a reasonable meaning in the context of the specification, the Appellants disagree with the Examiner's interpretation of "array information," in the rejected claims to include data from sample contacted with an array. According to the definition on page 13 of the specification, array information is specifically stated as

> distinct from sample or target information because array information yields no relevant information about sample or targets, except for targets that bind to the array information features.

As such, array information is information about the array itself and does not contain data from samples. Although it may be encoded in different formats as described by the various embodiments, it is still information about the array. Since Cronin '824 and '830 fail to provide this element, they cannot anticipate the rejected claims. Because all claims contain the elements of Claim 1, the Appellants request reversal of all rejections on this basis.

The Examiner further alleges that Cronin '824 has an effective filing date of May 1, 2002, which is the filing date of the parent Cronin '830. The Appellants submit that the subject matter of Claims 31-38 and 51-52 in Cronin '824 are not supported in the parent Cronin '830. As such, this subject matter introduced into Cronin '824 is only effective on March 3, 2006, the filing date of Cronin '824. Since the Appellants' filing date is prior to March 3, 2006, this subject matter in Cronin may not be relied upon as prior art.

In an attempt to support this allegation, the Examiner points to paragraphs [0089] and [0138] in the parent Cronin '830 as supporting the subject matter of

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2*E.g., Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998), *Innova*, 381 F.3d 1116; *Gemstar-TV Guide Int'l, Inc. v. Int'l Trade Comm'n*, 383 F.3d 1352, 1364 (Fed. Cir. 2004); *Vitronics*, 90 F.3d at 1582-83, *Markman*, 52 F.3d at 979-80.

Claims 31-38 and 51-52 in Cronin '824. The passages in the parent Cronin '830 are reproduced below for the Board's convenience.

> [0089] When the chips comprise four probe sets, as discussed supra, and the probe sets are laid down in four lanes, an A lane, a C-lane, a G lane and a T or U lane, the probe having a segment exhibiting perfect complementarity to a reference sequence varies between the four lanes from one column to another. This does not present any significant difficulty in computer analysis of the data from the chip. However, visual inspection of the hybridization pattern of the chip is sometimes facilitated by provision of an extra lane of probes, in which each probe has a segment exhibiting perfect complementarity to the reference sequence. See **FIG. 4A**. This extra lane of probes is called the wildtype lane and contains only probes from the first probe set. Each wildtype lane probe has a segment that is identical to a segment from one of the probes in the other four lanes (which lane depending on the column position). The wildtype lane hybridizes to a target sequence at all nucleotide positions except those in which deviations from the reference sequence occurs. The hybridization pattern of the wildtype lane thereby provides a simple visual indication of mutations.
>
> [0138] When a target is hybridized to the pools, only those pools comprising a component probe having a segment that is exactly complementary to the target light up. The identity of the target is then decoded from the pattern of hybridizing pools. Each pool that lights up is correlated with a particular value in a particular digit. Thus, the aggregate hybridization patterns of each lighting pool reveal the value of each digit in the code defining the identity of the target hybridized to the array.

Although the Claims of Cronin '824 recite the phrase "array information," its disclosure in the specification of the parent is not related to information about the array. Rather, it only discloses target binding and data analysis as evidenced by the passages above. As such, the Claims of Cronin '824 is not entitled to the filing date of its parent and consequently, do not constitute prior art to the Appellants' claimed invention.

In view of the foregoing discussion, the Appellants submit that Cronin cannot anticipate the claimed invention. As such, this rejection should be reversed.

Group II: Claims 3, 4, and 5

In addition to all the limitations of Claim 1, Claims 3-5 also contain the element of information for decoding encoded array information that comprises a table. The Appellants submit that this element of information for decoding encoded array information comprising a table is not disclosed in Cronin.

In making this rejection, the Examiner cites claims 33-35 in Cronin '824 as anticipating the claimed invention. However, a detailed analysis of these claims and the specification of Cronin '824 and of its parent Cronin '830 (US2003/0165830) reveals that Cronin only discloses information about data analysis of sample target binding. Nowhere in Cronin is there a disclosure of information for decoding array information that comprises a table. As such, Cronin fails to disclose information for decoded encoded array information that comprises a table as required by the rejected claims.

Moreover, Claims 33-35 in Cronin '824 reciting "information for decoding array information [comprising] a table" are not supported anywhere in the specification of parent Cronin '830. The Appellants submit that since Claims 33-35 in Cronin '824 are not supported by the parent, they are not entitled to the filing date of the parent Cronin '830. As such, the subject matter of Claims 33-35 cannot constitute prior art to the Appellants' claimed invention.

Therefore, because Cronin fails to disclose information decoding encoded array information comprising a table, the Appellants respectfully request reversal of the rejection of Claims 3-5 as being anticipated under 35 U.S.C. § 102(e) over Cronin.

Group III: Claims 7 and 8

In addition to all the limitations of Claim 1, Claims 7 and 8 also contain the element of information for decoding encoded array information that is a file. The Appellants submit that this element of information for decoding encoded array information that is a file is not disclosed in Cronin.

In making this rejection, the Examiner cites Claims 37 and 38 in Cronin '824 as anticipating the claimed invention. However, a detailed analysis of these claims and the specification of Cronin '824 and of its parent Cronin '830 (US2003/0165830) reveals that Cronin only discloses information about data analysis of sample target

binding. The Examiner has not provided any support in the specification for Claims 37 and 38 in Cronin '824. Nowhere in Cronin is there a disclosure of information for decoding array information that is a file.

Moreover, Claims 37 and 38 in Cronin '824 reciting "information for decoding array information [that] is a file" are not supported anywhere in the specification of parent Cronin '830. The Appellants submit that since Claims 37 and 38 in Cronin '824 are not supported by the parent, they are not entitled to the filing date of the parent Cronin '830. As such, the subject matter of Claims 33-35 cannot constitute prior art to the Appellants' claimed invention.

Therefore, because Cronin fails to disclose decoded encoded array information that is a file, the Appellants respectfully request reversal of the rejection of Claims 7 and 8 as being anticipated under 35 U.S.C. § 102(e) over Cronin.

II. Claim 9 stands rejected under 35 U.S.C. §103 as being unpatentable over Cronin et al. and Cool (US 6912469).

Claim 9 is rejected under 35 U.S.C. § 103(a) as allegedly obvious over Cronin '824, in view of Cool (US 6912469). The Appellants respectfully traverse this rejection.

In making this rejection, the Examiner asserts that Cronin discloses the computer-readable medium of Claim 1. The Examiner admits that Cronin does not teach binary ASCII code as recited in Claim 9 and cites Cool to combine with Cronin in order to render the claimed invention obvious.

It is well established that to reject a claim based on this rationale, the Examiner must provide evidence comprising at least the following:

> A finding that the prior art included each element claimed [...] with the only difference between the claimed invention and the prior art being the lack of actual combination...[3]

3 Federal Register vol. 72, No. 195, Oct 10, 2007. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)

In support of this principle, several case decisions[4] have also affirmed that the Office bears the burden to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make every element of the composition or device, or carry out the entire claimed process, and would have had a reasonable expectation of success in doing so.

The Appellants submit that the combination of Cronin and Cool fails to teach or suggest each and every element of the claimed invention. As a dependent claim of Claim 1, Claim 9 contains the element of decoding encoded array information. As discussed in detail in the previous section, Cronin does not teach decoding encoded array information. Specifically, all the passages in Cronin pointed to by the Examiner are directed to data analysis from sample contacting arrays.

The Appellants further submit that Cronin fails to suggest decoding encoded array information. Nowhere in Cronin is there a suggestion of decoding encoded array information. Since Cronin's invention is drawn to decoding hybridization pattern of sample targets in order to detect gene mutations, it is silent on array information. As such, it fails to suggest array information features and decoding encoded array information.

As Cool was cited solely for its alleged teaching of encoding binary coded information as binary ASCII code, it fails to make up the deficiency of Cronin. As such, the Examiner has not articulated any reason why an ordinary person skill in the art would arrive at subject matter of Claim 9 when none of the cited references teach or suggest decoding encoded array information.

Moreover, as discussed previously, Cronin's claims cited by the Examiner are not entitled to the filing date of the parent Cronin '830. As such, the instant application predates the subject matter of Cronin's claims being cited against the present claims and Cronin therefore cannot be used for rejecting the claims for obviousness.

In view of the foregoing discussion, the Appellants contend that Cool's teaching of binary ASCII code cannot remedy the deficiency of Cronin. The

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4 *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007); *Omegaflex, Inc. v. Parker-Hannifin Corp.*, 2007 U.S. App. LEXIS 14308 (Fed. Cir. 2007)

Appellants thus respectfully request that this rejection be reversed.

III. Claim 10 stands rejected under 35 U.S.C. §103 as being unpatentable over Cronin et al. and Hu et al. (US 2004/0248287)

The Examiner has maintained the rejection of Claim 10 under 35 USC § 103(a) as obvious over Cronin '824 in view of Hu et al. (US 2004/0248287). The Appellants respectfully traverse this rejection.

The Examiner asserts that Cronin teaches the computer-readable medium of Claim 1. The Examiner admits that Cronin does not teach the use of multi-arrays so cites Hu in combination of Cronin in order to render the claimed invention obvious.

As noted above, in order to present a *prima facie* case of obviousness, the Examiner must at least present a finding that prior art includes every element in the claimed invention. The Appellants contend that the combination of Cronin and Hu does not teach or suggest each and every element of the claimed invention.

As a dependent claim of Claim 1, Claim 10 contains the element of decoding encoded array information. As discussed previously, Cronin fails to teach the element of decoding encoding array information. Specifically, all the passages in Cronin pointed to by the Examiner are directed to data analysis from sample contacting arrays, and not array information.

The Appellants further submit that Cronin fails to suggest decoding encoded array information. Nowhere in Cronin is there a suggestion for decoding encoded array information. Since Cronin's invention is drawn to decoding hybridization pattern of sample targets in order to detect gene mutations, it is silent on array information. As such, it fails to suggest decoding encoded array information.

As Hu was cited solely for its alleged teaching of multi-arrays, it fails to remedy the deficiency of Cronin. As such, the Examiner has not articulated any reason why an ordinary person skill in the art would arrive at the subject matter of Claim 10 when none of the cited references teach or suggest decoding encoded array information.

Moreover, as discussed previously, Cronin's claims cited by the Examiner are

not entitled to the filing date of the parent Cronin '830. As such, the instant application predates the subject matter of Cronin's claims being cited against the present claims so Cronin therefore cannot be used to reject the claims for obviousness.

In view of the foregoing discussion, Appellants submit that Cronin alone or in combination with Hu fails to teach or suggest each and every element of Claim 10 and as such cannot render it obvious. Appellants thus respectfully request reversal of this rejection.

SUMMARY

I. Claims 1-8 and 26-27 are not anticipated under 35 U.S.C. §102(e) by Cronin et al. because Cronin fails to disclose the claim element of array information.

II. Claim 9 is not obvious under 35 U.S.C. §103(a) over Cronin in view of Cool, because the combined teaching of these references fails to teach or suggest the claim element of array information.

III. Claim 10 is not obvious under 35 U.S.C. §103 (a) over Cronin et al. in view of Hu et al. the combined teaching of these references fails to teach or suggest the claim element of array information.

RELIEF REQUESTED

The Appellants respectfully request that the rejections of claims 1-33 and 49-53 under 35 U.S.C. §112, first and second paragraphs, claims 1-33 and 52 under 35 U.S.C. §102(a,e), and claims 1-33 and 49-53 under 35 U.S.C. §103(a) be reversed, and that the application be remanded to the Examiner with instructions to issue a Notice of Allowance.

Respectfully submitted,

Date: February 21, 2008

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CLAIMS APPENDIX

1. A computer-readable medium comprising:

information for decoding encoded array information obtained from an array comprising one or more array information features, wherein said computer readable medium is selected from the group consisting of a data storage means, a memory access means, hard disk drive, an integrated circuit, a floppy disk, magnetic tape, a ROM, a CD-ROM, a hard-drive ROM, a DVD, a magneto-optical disk, a computer readable card, and a RAM.

2. The computer readable medium of claim 1, wherein said array is an array of nucleic acids.

3. The computer-readable medium of claim 1, wherein said information for decoding encoded array information comprises a table that contains:

a list of feature identifiers; and

a list of probe identifiers corresponding to said feature identifiers.

4. The computer-readable medium of claim 3, wherein said table indicates that certain features of said array are array information features.

5. The computer readable medium of claim 3, wherein said table indicates which features correspond to which bit of a code.

6. The computer-readable medium of claim 1, wherein said information for decoding encoded array information indicates an executable program for decoding said encoded array information.

7. The computer-readable medium of claim 1, wherein said information for decoding encoded array information is a file that has a unique identifier that corresponds to a unique identifier of an array.

8. The computer-readable medium of claim 7, wherein said array information features encode binary coded information, and said file contains information for decoding said binary coded information.

9. The computer-readable medium of claim 8, wherein said binary coded information is encoded using a binary coded decimal (BCD) or binary ASCII code.

10. The computer-readable medium of claim 1, wherein said decoded array information indicates a particular array of a multi-array substrate.

26. A kit for use with an array scanner, said kit comprising:

(a) a computer-readable medium according to claim 1; and

(b) instructions for operating said scanner according to said computer-readable medium.

27. The kit of claim 26, further comprising an array.

EVIDENCE APPENDIX

No evidence that qualifies under this heading has been submitted during the prosecution of this application, and as such it is left blank.

RELATED PROCEEDINGS APPENDIX

As stated in the *Related Appeals and Interferences* section above, there are no other appeals or interferences known to Appellants, the undersigned Appellants' representative, or the assignee to whom the inventors assigned their rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal. As such this section is left blank.